

Bothamia demeilloni gen. et spec. nov. from South Africa, with comparative notes between it and the closely allied genus *Fanthamia* de Meillon (Diptera: Ceratopogonidae)

by

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Bothamia demeilloni gen. et spec. nov., taken in the protected indigenous forest of Ngome, northern Natal, is described and illustrated. It is compared with, and differentiated from, the closely related genus *Fanthamia* represented here by the redescription of both sexes of *F. cardinis* de Meillon & Wirth. *F. cardinis*, a member of the weak-patterned group, is fully redescribed to ensure detailed comparison with *Bothamia* and also because shortcomings in the current taxonomy of this group hinders identification and the correct linking of sexes. A summary of climatic data and a brief descriptive introduction to the Ngome forest is given as a basis for future descriptions of Ceratopogonidae from this area.

INTRODUCTION

Its floristic affinities led Acocks (1975) to classify the forest of Ngome in northern Natal as Tropical and to state that it is the first of this type to be found inland, as such forest is confined to the coastal belt further south. Acocks (1975) states that further north in South Africa 'tropical forest occurs in Swaziland, south and west of Barberton, there passing on to the Drakensberg of the Transvaal and continuing northwards to the Soutpansberg with outliers on the higher, wetter parts of the mountains westwards to the Waterberg'. Ngome is thus not representative of the well-known mixed yellowwood (*Podocarpus*) forests found along the eastern slopes and foothills of the Natal Drakensberg. In fact the northernmost outlier of this temperate type of forest is near Qudeni, some 100 km south-west of Ngome.

The Ngome forest reserve (27° 53' S, 31° 20' E) is 110 km from the sea and covers approximately 5000 hectares of land. The Reserve is roughly rectangular in shape, some 15 km long by 5 km wide, and lies mostly between and on the slopes of two adjoining ravines that open southwards. There are occasional precipitous walls of rock and numerous streams. The forest lies at an altitude of between 650 m-1340 m above sea-level. Adjoining this protected area is the Sapekoe Tea Estate of 500 hectares, where relicts of indigenous bush still occur on those parts too steep or too moist to plant with tea. It was in one of these thickly wooded stream-fed patches that the new genus *Bothamia* was taken. Estate records show that the mean annual rainfall for the

last 12 years has been 1500 mm. The lowest rainfall was 882 mm during the 1982/83 season and the highest 2236 mm for the following July–June period. This high was in part mothered by cyclone ‘Demoina’ which dumped 791 mm of rain over a short period of 5 days in January 1984 followed two weeks later by cyclone ‘Imboa’ which brought winds of up to 136 km/hr but only 75 mm of rain. These, however, are freak occurrences in an area otherwise characterized more by endless days of mist and drizzle where it is not uncommon for a month to have 10 sunless days. The lowest average sunshine hours per day is 1.9 recorded for March 1977 even though the rainfall was meagre at 139 mm. Temperatures are equable with a December maximum of 36 °C (monthly mean 27 °C) and a June minimum of 1.5 °C (monthly mean 8 °C). Frost is rare and snow unrecorded.

These figures briefly summarize the climatic conditions in and around a forest where 107 species of Ceratopogonidae have now been collected.

Genus *Bothamia* gen. nov.

Type-species: *Bothamia demeilloni* spec. nov., by present designation.

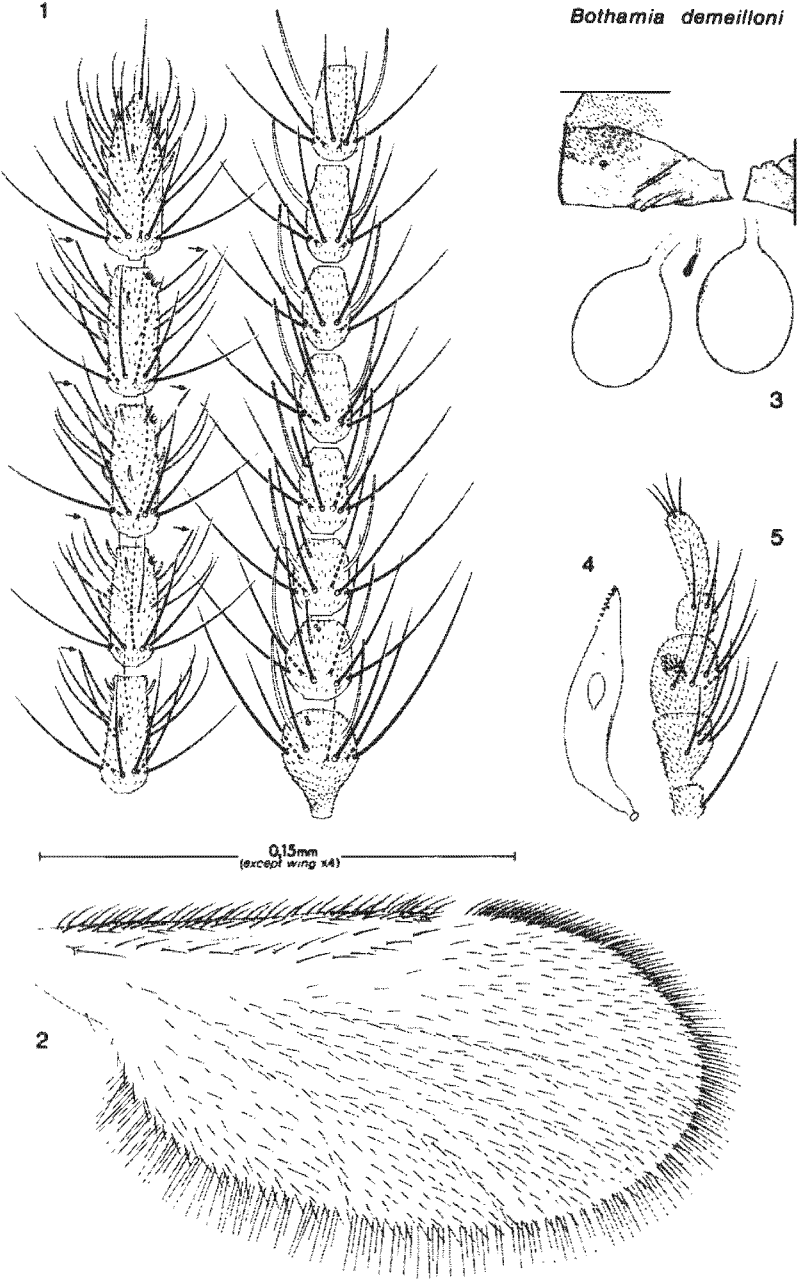
Generic diagnosis: Small yellow-ochreous to light brown midges, the females with distinctive pearly-white abdomens and colourless wings. Legs slender with fore legs light brown, darker than the yellowish-white middle and hind legs. Female antenna with sensilla coeloconica on segments XII–XIV; palpus five-segmented, third segment not markedly inflated, with small sensory pit. Wing colourless, rather densely clothed with macrotrichia, 2 small radial cells; vein M₂ obsolete at base; costa extending 0.5 wing length. Fourth tarsomeres heart-shaped. Two well-developed spermathecae plus a rudimentary one. Male antenna plumed, segments IV–XII fused, with sensilla coeloconica present on XIV; genitalia small without apicolateral processes on ninth tergite; aedeagus with 2 apical projections.

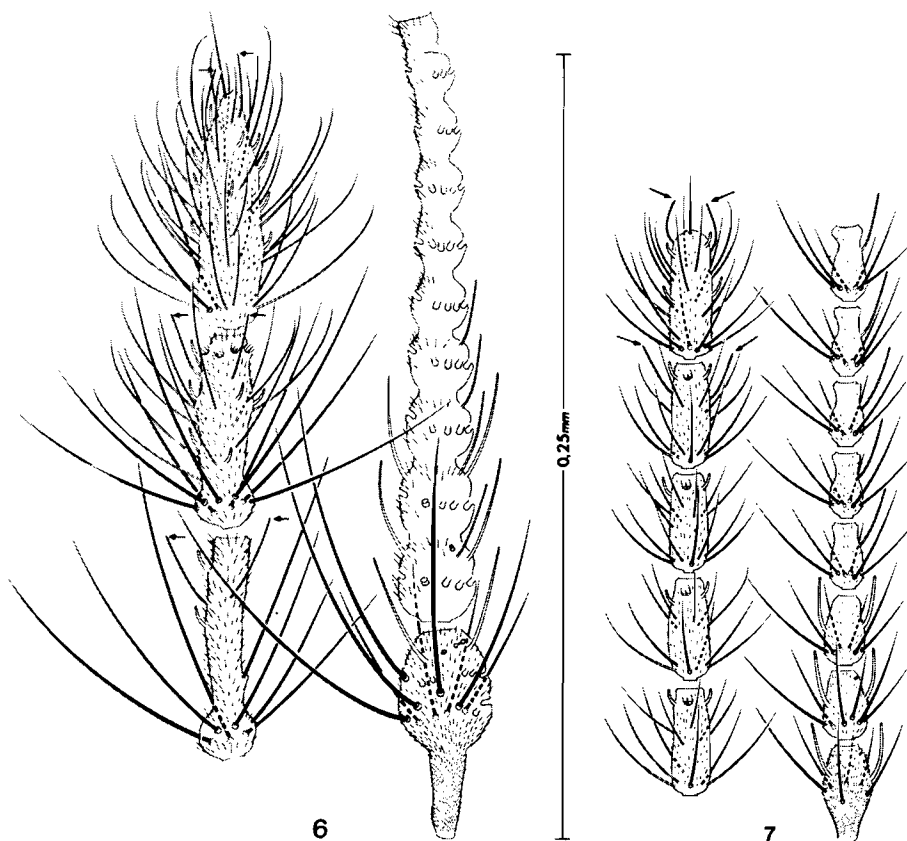
Bothamia demeilloni spec. nov., Figs 1–6, 8, 9

Female holotype. Wing length 0.78 mm, breadth 0.4 mm.

Head. Brown; eyes separated by width of a facet, strongly hairy except between top 1 or 2 rows of facets. Antenna (Fig. 1) light brown throughout. Segment III with a short stalk, without sensilla coeloconica but 7 sensilla chaetica of varying lengths, longest reaching half-way along segment V, also 2 long blunt-tipped sensilla trichodea and a single sensillum ampullaceum. Segment IV lacking sensilla coeloconica but with 6 sensilla chaetica basally, 2 long and 1 short blunt-tipped sensilla trichodea subapically, and 1 sensillum ampullaceum apically. Segments V–VII similar to IV but lacking the sensillum ampullaceum. Segments VIII–X lacking the single short blunt-tipped sensillum trichodeum and ampullaceum, otherwise the same as IV–VII. Segments XI–XIV basally each with 6 long sensilla chaetica of roughly equal length; XI–XIV each with 4 to 6 sensilla basiconica subapically and medianally; with 7 to 10 sharp-tipped trichodea of varying lengths medianally; also 1 or 2 slender blunt-tipped

Figs 1–5 *Bothamia demeilloni* gen. et spec. nov. 1. Antenna, female: segments XI–XV on left, segments III–X on right. Arrows indicate short, blunt-tipped trichodea. 2. Wing, female. 3. Genitalia, female: spermathecae and genital sclerotization. 4. Mandible, female. 5. Palpus, female.





Figs 6, 7 6. *Bothamia demeilloni* **gen. et spec. nov.**: antenna, male: segments XIII-XV on left, segments III-XII on right. Arrows indicate short, blunt-tipped trichodea. 7. *Fanthamia cardinis* de Meillon & Wirth: antenna, male: segments XI-XV on left, segments III-X on right. Arrows indicate short, blunt-tipped trichodea.

sensilla trichodea (arrowed); Segments XII-XIV each with 1 or 2 sensilla coeloconica apically; XV with a basal whorl of 7 sensilla chaetica plus 7 or more sensilla basiconica and about 20 sharp-tipped sensilla trichodea of varying lengths scattered over the remainder of the surface, apically with 1 sensillum chaeticum, no terminal papilla. Relative lengths of segments III-XV, 14-10-10-11-12-11-13-13-15-16-18-17-22. Surface of all segments evenly clothed with fine microtrichia. Palpus (Fig. 5) slightly longer than mouthparts, which are light-brown; sensory pit with 3 or 4 sinuous capitate sensilla; relative lengths of palpal segments I-V, 5-9-10-7-12. Mandible (Fig. 4) of insectivorous type with 8 or 9 coarse, sharply-pointed mesal teeth.

Thorax. Milk-chocolate brown, without pattern when in alcohol; scutellum,

postnotum and pleuron light brown. Wing (Fig. 2) yellowish with no indication of patterning or infuscation; macrotrichia very evenly distributed throughout, coarse, pale and inconspicuous; microtrichia a dense but very fine stipple; veins not obvious, basal half of M_2 obsolete; media petiolate, first radial cell narrow, second rectangular, both more or less equal in length; costal ratio 0.57. Halter white.

Legs slender uniformly straw-coloured to light brown, fore legs brown, middle and hind legs pale; unarmed. Hind femur only slightly stouter than others. Fore tibia with a subapical row of about 14 close-set, transparent spines, apical spur hyaline, slender, brush-like; hind tibia with apical row of 7 long, strong, semi-transparent spines and a subapical row of about 24 shorter, close-set transparent ones, apical spur stouter than on fore tibia, brush-like, pointed, rather short. Hind basitarsus light brown, armed with a row of about 32 shortish, stout, close-set spines running entire length of inner margin. Tarsomeres II–V of all legs pale, with tarsus IV heart-shaped, V elongated, slightly arcuate. Claws on all legs unequal, longer talon a fraction shorter than segment V, shorter talon only one-third length of longer one.

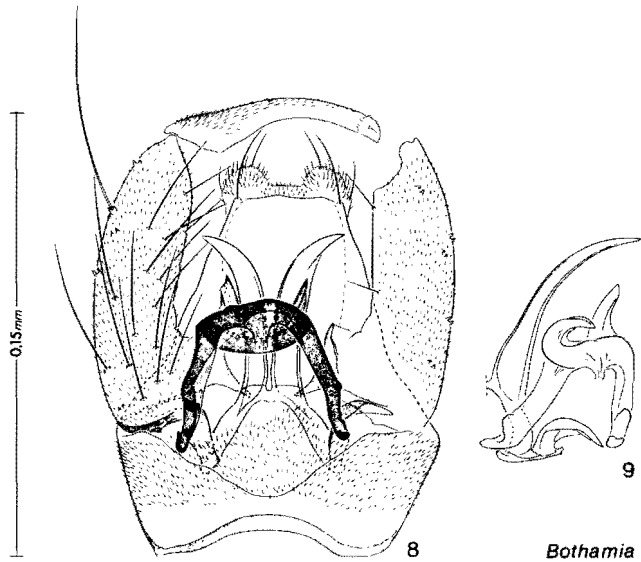
Abdomen. Rotund, pearly-white, but proximal segments with faintly demarcated pigmented plates dorsally. Genital sclerotization (Fig. 3) similar to that in *Culicoides*. Two equal-sized spermathecae (Fig. 3) both oblong and smooth with moderate necks, not darkly pigmented, measuring 0.02 mm \times 0.03 mm; third spermatheca rudimentary, very small, 0.005 mm in length.

Male paratype. Wing length 0.75 mm breadth 0.3 mm.

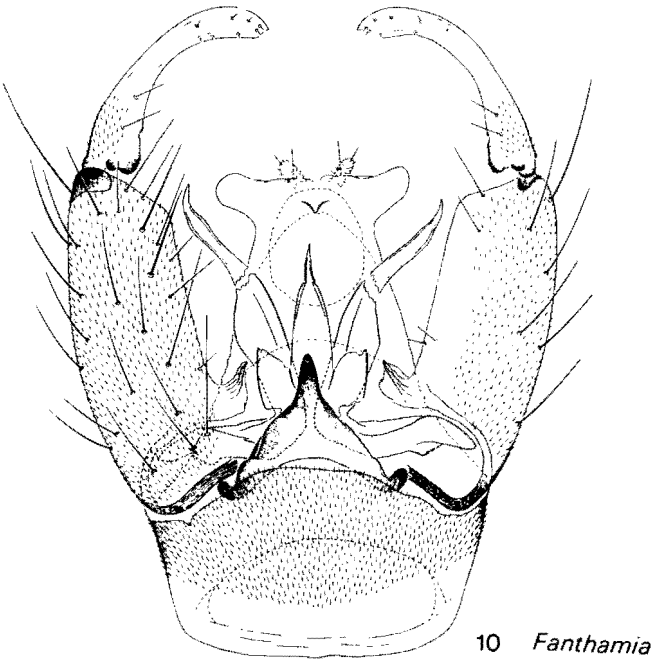
Head. Light brown; eyes separated in front by a distance of 2 facets, hairy on lower half only. Antenna (Fig. 6) light brown, as also plume which is tightly appressed. Segment III bearing 9 sensilla chaetica of varying thicknesses and lengths, 6 or more plume fibrillae, 2 long blunt-tipped sensilla trichodea and 1 sensillum ampullaceum; a fifth very small as yet unidentified sensillum present on the face opposite the sensillum ampullaceum. Segments IV–XII fused, almost round, gradually decreasing in length, each encircled by 9–12 plume fibrillae; IV and V each with 2 long and 1 short blunt-tipped sensilla trichodea; IV also carrying 1 sensillum ampullaceum apically; VI & VII each with 1 short, blunt-tipped sensillum trichodeum only; VIII to XII without sensilla trichodea, partially clothed with microtrichia. Segment XIII with 6 long sensilla chaetica basally and 1 subbasally, apically carrying 2 short sensilla basiconica and 2 thin, long blunt-tipped sensilla trichodea (arrowed). Segment XIV with basal whorl of 8 long sensilla chaetica all more or less equal in length; remainder of segment with 6 or more scattered sensilla basiconica and 10 scattered sharp-tipped sensilla trichodea of varying lengths; apically 2 thin blunt-tipped sensilla trichodea (arrowed) and 3 or 4 sensilla coeloconica. Segment XV basally with only 2 sensilla chaetica plus 6 or more long sharp-tipped sensilla trichodea; remainder of segment with 12 sensilla basiconica and 30 sharp-tipped sensilla trichodea of varying lengths; apically 2 blunt-tipped sensilla trichodea (arrowed) and 1 sensillum chaeticum; no terminal pipilla. Relative lengths of segments III–XV, 28–12–10–9–8–8–9–9–9–11–29–25–31. Palpus five-segmented; third segment almost round with a deep, rather narrow sensory pit containing about 4 capitate sensilla; relative lengths of I–V, 4–8–10–7–9.

Thorax. Mesonotum milk-chocolate brown, without pattern when in alcohol; scutellum of same colour, with 2 median and 1 lateral long bristles interspersed with 5 or 6 finer, shorter bristles. Pleuron and postnotum milk-chocolate brown. Wing without infuscation, much as in female; costal ratio 0.5. Halter white.

Legs coloured as in female, unarmed, femora stouter; fore tibia with subapical



Bothamia



10 *Fanthamia*

row of 12 close-set, transparent spines, apical spur hyaline, slender, brush-like; hind tibia with apical row of 7 long, strong, semi-transparent spines and subapical row of about 18 shorter, close-set transparent ones; apical spur hyaline, short, slender, pointed and brush-like. Hind basitarsus pale, armed with a row of shortish, close-set spines running entire length of inner margin; tarsomeres II–V of all legs pale, with IV heart-shaped and V elongated. Claws all small, equal, finely split apically.

Abdomen. Dorsal abdominal pigmented plates well-developed. Genitalia (Figs 8, 9) with posterior margin of ninth sternite moderately indented, membrane spiculate to just beyond base of basistyles, ninth tergite with posterior margin straight, lacking true apicolateral processes and possessing only a single strong bristle on each corner; ninth tergite with a pair of spiculate transparent lobes each bearing 2 short setae. Basistyles almost 4× as long as broad with a very well developed ventral root; dorsal root absent; base of basistyle a strongly sclerotized collar. Dististyle pale, gently curved, finely spiculate for almost entire length, without longer setae, tip rounded with 3 or more very short setae. Aedeagus (Figs 8, 9) unusual, deeply pigmented, roughly triangular with long legs and a high arch; with 2 posterior projections which in side-view (Fig. 9) look like the ears of a dog, 1 collapsed and 1 erect. Parameres like 2 broad blades, running parallel for half their length and then gently diverging, gradually narrowing to blunt points facing outwards; parameres narrowly fused medianally, basal remainder projecting downwards and outwards at an angle of 45°, halfway meeting apodemes which in turn project upwards and outwards at an angle of between 60–90°.

MATERIAL EXAMINED. Holotype ♀ (slide, Ngome 161), Ngome, N. Natal, 27.i.1981, R. Meiswinkel, blacklight in indigenous bush. 11 paratype ♂♂ all from same locality and taken at blacklight by author, slides numbered and dated as follows: Ngome 162, 27.i.1981; Ngome 403, 4.i.1983; Ngome 391, 4.i.1983; Ngome 432, 23.xii.1983 (genitalia in side-view); Ngome 433, 23.xii.1983; Ngome 468, 24.xii.1983; Ngome 481, 24.xii.1983; Ngome 498, 23.ix.1984; Ngome 499, 23.ix.1984; Ngome 539, 30.ix.1984; Ngome 559, 25.ix.1984. Paratype ♀: Ngome 519, 23.ix.84. All material in collection of Veterinary Research Institute, Onderstepoort.

Many years ago Botha de Meillon acknowledged a source of inspiration by naming the genus *Fanthamia* for Prof. H. B. Fantham. Now, by naming the closely related genus *Bothamia* for him, I in turn should like to acknowledge the warmth his interest and constant care have given me.

Genus *Fanthamia* de Meillon

***Fanthamia* de Meillon, 1939: 103**

Fanthamia cardinis de Meillon & Wirth, Figs 7, 10, 16

***Fanthamia cardinis* de Meillon & Wirth, 1979: 194.**

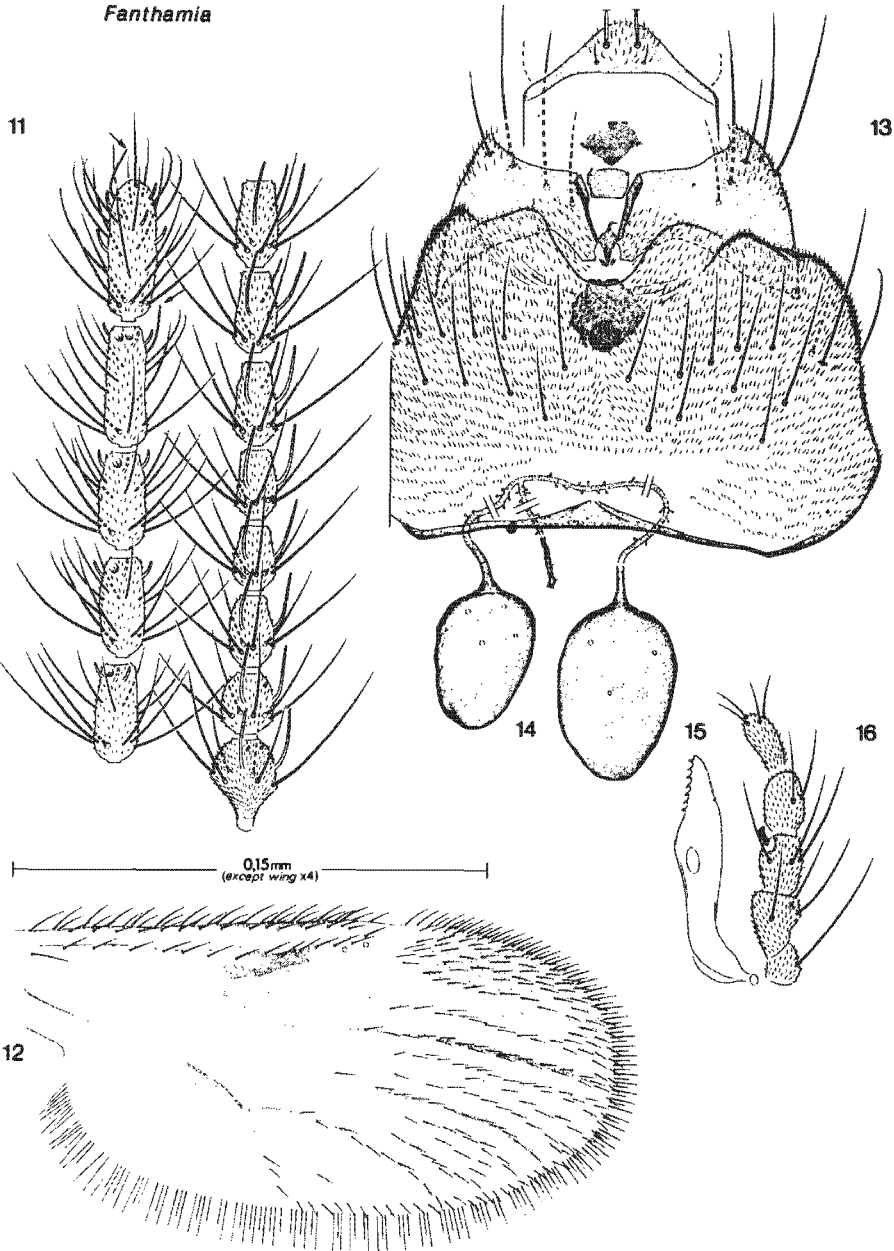
A small milk-chocolate brown species with faintly patterned wings.

EMALE. Wing length 0.7 mm, breadth 0.375 mm.

Head. Brown; eyes separated by a width of 3 to 4 facets, strongly hairy all over. Antenna (Fig. 11) brown with basal portions a shade paler. Segment III with a

Figs 8–10 8. *Bothamia demeilloni* **gen. et spec. nov.:** genitalia, male. 9. Aedeagus and paramere, side view. 10. *Fanthamia cardinis* de Meillon & Wirth: genitalia, male.

Fanthamia



short stalk bearing 6 sensilla chaetica of varying lengths, the longest reaching the base of V, also 2 long blunt-tipped sensilla trichodea and 2 sensilla ampullacea. Segments IV–VII all carry a basal whorl of 6 sensilla chaetica and 2 long blunt-tipped trichodea; IV also carries 1 ampullaceum apically. Segments VIII–X each with an extra short, blunt-tipped trichodeum otherwise the same as segments V–VII. Segments XI–XIV basally each carrying 1 sensillum chaeticum, apically 1 sensillum coeloconicum with 2 sensilla basiconica and, in a basal and a median whorl, a combined total of 10 sharp-tipped sensilla trichodea of varying lengths. Segment XIV also carries apically 1 short blunt-tipped trichodeum (arrowed). Segment XV with a basal whorl of 6 sensilla chaetica, about 4 sensilla basiconica and 16 sharp-tipped trichodea of varying lengths scattered throughout the segment; apically, as in XIV, 1 short blunt-tipped trichodeum (arrowed) and 1 chaeticum; no sensilla coeloconica. Relative lengths of segments III–XV, 17,5–11,5–13,5–12–13–16–15–16–19–19–18,5–23–27. Palpus (Fig. 16) five-segmented hardly differing from that of the male; third segment almost round and bearing a tiny, shallow sensory pit with 2 sinuous capitate sensilla; relative lengths of I–V, 5–10–7,5–7–9,5. Mandible (Fig. 15) with 8 coarse, sharp teeth along inner margin and 4 shallow serrations on outer margin.

Thorax. Mesonotum, postnotum and pleuron milk-chocolate brown; scutellum the same colour with a median and a lateral long bristle and 2 smaller bristles between median and lateral bristle. Wing (Fig. 12) with infuscation, light brown with the following pale areas: a large round spot over end of costa, 1 in the cubital cell, major portions of anal cell and basal third of wing; darkest areas are found over first radial cell and in cell R₅ just beyond end of costa; microtrichia a dense but very fine stipple, macrotrichia coarse and dark, moderately abundant on distal half of wing as illustrated; veins pigmented, thus obvious; first radial cell present, second obliterated; costal ratio 0,6. Halter white.

Legs slender with femora unbanded, fore femur a very light brown, hind femur a much deeper brown; all tibiae with a narrow pale area basally fading into a light brown median half, which in turn fades into a pale subapical area, apices narrowly darkened; fore tibia with a subapical row of about 12 close-set, transparent spines, apical spur of moderate length, sinuous, pale, not brush-like; hind tibia with an apical row of 7 long, strong, semi-transparent spines and a subapical row of about 22 shorter, close-set transparent ones; apical spur shorter than on fore tibia but strongly brush-like. Hind basitarsus lightly pigmented, not arcuate, armed with a row of 25 shortish, stout, close-set spines running entire length of inner margin. Tarsomeres II–V of all legs pale, tarsus IV heart-shaped, V elongated and gently curved. Claws on fore and middle legs small, equal, finely split apically; hind claws unequal with longer talon about equal in length to segment V and shorter talon about half the length of longer one, finely split apically.

Abdomen. Dorsally with brown pigmented plates. Genital sclerotization (Fig. 13) is complex and unique with peculiar arrangement and form of pigmented island sclerites which cradle the opening of the oviduct; 2 spermathecae (Fig. 14) are irregu-

Figs 11–16 11. *Fanthamia cardinis* de Meillon & Wirth: antenna, female: segments XI–XV on left, segments III–X on right. Arrows indicate short, blunt-tipped trichodea. 12. Wing, female. 13. Genitalia, female: segments VIII–X showing island sclerites cradling the opening of the oviduct. 14. Spermathecae, female. 15. Mandible, female. 16. Palpus, female.

larly oblong, heavily chitinized each with 5 or more tiny pores; unequal in size, measuring $0,066 \times 0,042$ mm and $0,087 \times 0,051$ mm respectively, with long slender necks approximately 0,02 mm in length; third rudimentary spermatheca 0,022 mm in length, very slender; spermathecal ducts with minute, very inconspicuous capitate papillae.

Male. Wing length 0,72 mm, breadth 0,38 mm.

Head. Light brown; eyes separated in front by a distance of 5 facets, densely hairy all over. Antenna (Fig. 7) light brown, lacking a plume. Segment III rather narrow, bearing medianally 6 sensilla chaetica of varying lengths, the longest reaching half-way along segment IV, also 2 long, stout blunt-tipped sensilla trichodea and 1 sensillum ampullaceum, no sensilla coeloconica. Segment IV with a basal whorl of 6 sensilla chaetica of different lengths and thicknesses, apically with 2 long, stout blunt-tipped sensilla trichodea and 1 sensillum ampullaceum. Segment V as in IV only lacking sensillum ampullaceum. Segments VI–X with the same basal whorl of 6 sensilla chaetica but these segments, though lacking the 2 long, stout blunt-tipped trichodea of preceding segments, now carry 1 very slender blunt-tipped trichodeum equal in length to the stouter trichodea on segments IV and V. Segments XI–XIV almost exactly as in female. Segment XIV also carries apically 2 short blunt-tipped trichodea (arrowed). Segment XV just as in female but has apically, as in XIV, 2 short blunt-tipped trichodea (arrowed). Relative lengths of segments III–XV, 19–13–13–12,5–12,5–13,5–14,5–21–19,5–19–20–25. Palpus five-segmented; third segment round, not inflated, bearing a tiny, shallow sensory pit with 2 sinuous capitate sensilla; relative lengths of I–V, 4–9,5–6–6–7,5.

Thorax. Mesonotum milk-chocolate brown, without pattern. Scutellum the same colour with 1 median and 1 lateral long bristle and 1 smaller bristle on each side of the median and lateral bristle. Pleuron and postnotum of the same brown. Wing as in female but just a shade paler. Halter white.

Legs with colouration as described for female; fore tibia with a subapical row of 8 or 9 close-set, transparent spines, apical spur of moderate length, sinuous, pale, not brush-like; hind tibia with apical row of 7 long, strong, semi-transparent spines and a subapical row of 14 shorter, close-set transparent ones; apical spur shorter than on fore tibia, curved, brush-like. Hind basitarsus pale, not arcuate, armed with a row of about 23 shortish, stout, close-set spines running entire length of inner margin. Tarsomere II–V of all legs pale, with tarsus IV heart-shaped and V elongated, slightly curved. Claws all small, equal, finely split apically.

Abdomen. Genitalia (Fig. 10) with posterior margin of ninth sternite produced, densely spiculate; ninth tergite narrowing towards posterior end, then suddenly broadening into apicolateral processes; posterior margin of tergite notched medianally and carrying a pair of small strongly spiculate lobes. Basistyle $3\times$ as long as broad with a well-developed ventral root; dorsal root absent with base of basistyle a strongly sclerotized collar. Dististyle brown, rather strongly curved with basal third finely spiculate and carrying long, fine setae; tip beaked and carrying a number of very short setae. Aedeagus (Fig. 10) typical for genus consisting of a dorsal strongly sclerotized triangular portion from which ventrally there arises a weakly sclerotized finely pointed sclerite; at the base of each side of this sclerite, in line with the apex of the dark triangular portion, arises a weakly pigmented rectangular 'wing'; parameres separate, almost touching basally and are as 2 broad, gently diverging blades which abruptly narrow medianally where they are hinged, the apical remainder consisting of a much narrower, con-

tinuously diverging blade which has a finely-pointed, slightly recurved tip; apodemes bent out at right angles, stout and sinuous, typical for genus.

MATERIAL EXAMINED. ♀, (slide Matangari 29), Vandaland, N. Transvaal, 21.iv.1983, R. Meiswinkel, blacklight at edge of vle. 5 ♂♂ (slide Carpe Diem 28), Trichardtsdal, N. Transvaal, 11.xii.1979, H. Cross, blacklight near vle; (slides Tshildzini 35 and 51), Vandaland, N. Transvaal, 3.xi.1978, C. K. Ikin, blacklight in hospital grounds; (slide Matangari 56), Vandaland, N. Transvaal, 21.iv.1983, R. Meiswinkel, blacklight at edge of vle; (slide Tzaneen 22), N. Transvaal, 30.i.1980, R. Meiswinkel, blacklight in town garden. All material in collection of Veterinary Research Institute, Onderstepoort.

Discussion. Of the 12 known species of Afrotropical *Fanthamia*, 8 have the wings weakly patterned. Two of the latter 8 are unusual and will in the future need re-appraisal from fresh material. The first is *F. carina* de Meillon & Hardy, which has the wing entirely without spots. The male too falls outside the parameters presently tabulated for *Fanthamia* in that the margin of the ninth sternite of the genitalia is indented rather than produced. Unfortunately the type specimens have dried out completely and are quite useless for further study. The second species *F. imperfectus* (Goetghebuer), originally described as a *Culicoides*, was recently transferred to *Fanthamia* by de Meillon & Wirth (1979) after it had been assigned to *Ceratopogon* by Khamala (1972). It differs from *Fanthamia*, however, in that all female claws are small and equal and more importantly, the spermathecae are of the shape ordinarily found in *Culicoides*, their form being markedly distinct and individual in *Fanthamia*. In this respect *F. imperfectus* resembles the new genus *Bothamia* but here in turn there is the important difference of tarsal claw size. It seems likely that *F. imperfectus* will eventually prove to be representative of a new genus within the still poorly understood Ceratopogonini as recently postulated by de Meillon & Downes (1986). For this the discovery of males remains vital.

Fanthamia adulator (de Meillon), *F. aniculae* de Meillon & Downes, *F. forsteri* de Meillon & Downes, *F. draconis* de Meillon & Downes, and *F. sani* de Meillon & Downes, are 5 of the 6 species remaining in the unicolorous or weak-patterned group and in the male sex are all easily separable by virtue of their very distinctive parameres. The sixth species *F. cardinis* de Meillon & Wirth, is the only *Fanthamia* at present known to have the apical half of the parameres hinged. For the following reasons it is difficult to reconcile the present redescription of the male of *F. cardinis* with that of the original by de Meillon & Wirth (1979): (i) the hinged apical half of the parameres, the most species-specific character of the male genitalia, were in the present study never seen to be folded forward as illustrated by de Meillon & Wirth; (ii) they give the eyes as bare, here they are hairy, (iii) the aedeagal arch as high, here it is low, and (iv) no mention, illustrative or descriptive is made of the ventral root of the basistyle so obvious in the specimens before me. A single male paratype of *F. cardinis* loaned from the USNM was examined and has the genitalia badly destroyed and the head missing. Thus the eyes could not be checked for hairiness and also no sensilla counts could be made from the antenna, so important in separating the species in this genus. A paratype female in good condition and which has hairy eyes also differs from the female used in the present redescription in that it has an extra short sensillum trichodeum on segments VI and VII. In 7 species of *Fanthamia* at hand the distributions of these sensilla trichodea have proved to be highly species-specific and can thus not be considered as variable. This underlines an important fact in the weak-patterned group: as they are inseparable

TABLE 1. Differentiation of the genera *Fanthamia*, *Bothamia* and *Culicoides*

<i>Fanthamia</i>	<i>Bothamia</i>	<i>Culicoides</i>
Wings:		
1. Always spotted although faintly in some species; veins obvious.	Colourless, almost impossible to see; veins also inconspicuous.	Variable, clearwinged to strongly spotted, veins obvious.
2. Wing macrotrichia coarse, dark brown, always obvious, occurring on apical half of wing.	Macrotrichia coarse, pale, difficult to see, spread throughout wing.	Wing partially or completely clothed with either dark or pale macrotrichia.
3. Wing membrane almost glabrous, only with minute microtrichia.	Similar to <i>Fanthamia</i> .	Wing membrane not glabrous, with coarse microtrichia.
4. First radial cell complete, second obliterated.	With 2 radial cells.	With 1 or 2 radial cells.
Antennae:		
5. ♂ lacking plume.	♂ plumed.	♂ plumed.
6. ♀ segments XI-XV always with 1-1-1-1-6 sensilla chaetica distribution.	♀ segments XI-XV each with 6 or 7 sensilla chaetica.	♀ segments XI-XV with variable number of sensilla chaetica.
7. ♀ segment III without sensilla coeloconica.	♀ as in <i>Fanthamia</i> .	♀ segment III always with sensilla coeloconica.
8. ♀ with short, blunt-tipped sensilla trichodeum on segments VI-X or VIII-X, never on segments IV and V.	Segments IV-VII with 1 short blunt-tipped trichodeum; VIII-X without.	Segments IV-X with 1 or 2 short blunt-tipped trichodea in combination with 2 long blunt-tipped ones.
Mouthparts:		
9. ♀ with third palpal segment small and round, the sensory pit small and containing few capitate sensilla.	♀ as in <i>Fanthamia</i> .	♀ variable, but normally with a more well developed sensory pit containing numerous capitate sensilla.
10. ♀ mandible with coarse teeth of insectivorous type.	♀ as in <i>Fanthamia</i> .	♀ mandibles finely toothed for bloodsucking.
Genitalia:		
11. ♂: basal portion of parameres with articulated apodemes and thus basistyles lacking dorsal feet.	Similar to <i>Fanthamia</i> .	Basal portions of parameres not articulated; basistyles with dorsal feet.
12. Posterior margin of ninth sternite never indented, always produced.	Margin indented.	Margin indented.
Legs:		
13. ♀ claws on fore and middle legs small and equal, on hind legs unequal.	♀ claws on all legs unequal.	♀ claws on all legs equal.

on wing pattern these species are difficult to sex-link especially in an area where 3 species may occur sympatrically. This is the case with *F. adulator*, *F. forsteri* and *F. sani* at Ngome. Until the intersexual differences of the sensilla trichodea distributions are more fully understood the task of sex association will remain a difficult one.

Table I serves to separate the closely allied genera *Fanthamia* and *Bothamia* and these in turn are distinguished from the blood-sucking genus *Culicoides* for which the new genus was at first mistaken.

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